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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/553,624

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EXAMINER

HANNON, CHRISTIAN A

ART UNIT

PAPER NUMBER

2618

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DELIVERY MODE

04/30/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/553,624	Applicant(s) TAKAHATA ET AL.	
	Examiner CHRISTIAN A. HANNON	Art Unit 2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6,8,9 and 11 is/are allowed.
- 6) ☒ Claim(s) 1-5 and 10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
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| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5 & 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bank et al (US 7,151,837), hereinafter Bank, in view of Wei et al (US 6,289,101), hereinafter Wei.

Regarding claim 1 Bank teaches a flat panel speaker unit comprising within a frame a transparent single diaphragm, acoustic radiator, for outputting sound (Column 1, Lines 37-41; Bank), a vibration generating part, transducer, arranged on the peripheral portion of the diaphragm to directly drive the diaphragm for vibration (Column 1, Lines 52-67; Column 2, Lines 1-4; Bank), and a display device disposed inward of the diaphragm, for displaying information (Figure 2; Column 6, Lines 37-40; Bank) the diaphragm and the display device being stacked with a gap there between so that an image on the display device can be viewed through the diaphragm (Figure 2; Column 6, Lines 37-40; Bank), and the diaphragm being fixed to the frame by mounting a peripheral portion of the diaphragm onto the frame (Column 1, Lines 49-51; Column 6, Lines 40-42; Bank) and the vibration generating part could include a coil and magnet (Column 2, Lines 1-4; Bank). However Bank fails to explicitly teach that the either the

magnet or the coil is mounted on the diaphragm and the other is mounted on the frame. Wei teaches a known transducer consisting of a coil and a magnet where each component is connected to either the frame, the yoke, or the diaphragm, vibrating diaphragm (Column 2, Lines 32-52; Wei). Therefore it would be obvious to one of ordinary skill in the art to combine the teachings of Bank with those of Wei in order to provide a coil/magnet type transducer in cases when a piezoelectric transducer was not wanted as a design choice, in order to lose 99% of the input energy to heat, and thereby lowering the efficiency.

Regarding claim 2, Bank and Wei teach claim 1, wherein a plurality of vibration generating parts are furnished adjacent a peripheral edge of the display device (Column 10, Lines 21-30; Bank).

Regarding claim 3, Bank and Wei teach claim 2, wherein locating nubs are formed on the peripheral portion of the diaphragm, and the coils are fitted onto the locating nubs on a lower face of the diaphragm (Column 7, Lines 21-27; Bank).

Regarding claim 4, Bank and Wei teach claim 1, wherein the vibration generating part is arranged outward of the display device an electric wire or flexible circuit board extending outward of the frame is connected to the display device or the vibration generating part and a through hole is provided in the frame between the display device and the vibration generating part (Figure 2; Column 6, Lines 32-34; Bank). The examiner asserts official notice that a mobile phone as taught by Bank obviously requires a circuit board housing the telephony functions of the mobile phone.

Regarding claim 5, Bank and Wei teach claim 4, wherein the electric wire or flexible circuit board is drawn outside the frame through the hole (Figure 2; Column 6, Lines 32-34; Bank). The examiner asserts official notice that a mobile phone as taught by Bank obviously requires a circuit board housing the telephony functions of the mobile phone.

Regarding claim 10, Bank and Wei teach claim 1, wherein an electronic device comprises the flat panel speaker (Column 6, Lines 32-34; Bank).

Allowable Subject Matter

3. Claims 6, 8-9 & 11 are allowed.

Regarding claim 6, Bank teaches a transparent single diaphragm for outputting sound and a vibration generating part including a coil and magnet for vibrating the diaphragm along with a display device disposed inward of the diaphragm for displaying information (Column 1, Lines 52-67; Column 2, Lines 1-4; Bank). However Bank fails to teach that either one of the coil and magnet is mounted on a peripheral portion of the diaphragm, a central portion of the diaphragm which fully covers an underlying display is thicker than the peripheral portion of the diaphragm to which the vibration generating part is mounted, and the coil of the vibration generating part is coiled more laterally than vertically and causes the diaphragm to vibrate by receiving magnetic flux lines, generating magnetic flux lines emitted from the magnet, that are diagonal or parallel with respect to the diaphragm.

Claims 8-9 & 11 are allowed as they depend from claim 6.

Response to Arguments

4. Applicant's arguments with respect to claims 1-6 & 8-11 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Saiki et al (US 7,120,264) disclose a sound reproducing apparatus.

Lin et al (US 2002/0034313) disclose an application of invisible speaker and the method for fabricating the same.

Toki (US 6,427,017) disclose a piezoelectric diaphragm and piezoelectric speaker.

Croft III et al (US 6,760,455) disclose an electrostatic loudspeaker with a distributed filter.

Aarts et al (US 6,791,519) disclose a sound and vision system.

Murden et al (US 6,940,564) disclose a display substrate and display device.

Azima et al (US 6,522,760) disclose an active acoustic device.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTIAN A. HANNON whose telephone number is

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(571)272-7385. The examiner can normally be reached on Mon. - Fri. 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. A. H./
Examiner, Art Unit 2618

/Edward Urban/

Supervisory Patent Examiner, Art Unit 2618